

Airbus studies “Moon Cruiser” concept for ESA’s cis-lunar transfer vehicle

Versatile, autonomous logistics vehicle to support future lunar missions based on heritage from Orion ESM and ATV

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Toulouse, 28 January 2021 - Airbus has been awarded a CLTV (Cis-Lunar Transfer Vehicle) study for a "Moon Cruiser" by the European Space Agency (ESA). According to the study concept (two parallel Phase A/B1), the CLTV is a versatile, autonomous logistics vehicle that could, for example, provide timely and efficient support to NASA and ESA in the implementation of the future Artemis Moon missions. The spacecraft will be based on existing and proven technologies and will complement the multipurpose European Large Logistic Lander (EL3).

The execution of lunar missions, including landing on the Moon and setting up upcoming lunar space station, Gateway, is a complex and challenging task for the international community. It requires a precisely planned chain of supply and logistics missions. The Airbus Moon Cruiser concept supports these challenges in several ways:

- Gateway logistics: the CLTV can transport cargo or fuel for refuelling in lunar orbit and to the Gateway, the international project led by the two main contributors NASA (United States) and ESA (Europe), supporting a sustainable presence on the Moon and exploration beyond and a pillar of NASA’s Artemis programme.
- Transfer of a large Lunar Module into Low Lunar Orbit: The CLTV is required to fly a lander or an ascent stage between the Gateway and the low lunar orbit, to perform landing and ascent missions with larger and more extensive services
- CLTV’s versatility will also allow it to support missions to post-ISS orbital infrastructure in LEO as well as missions in the field of GEO satcom servicing.

The CLTV’s design allows multiple mission types to be carried out with a single vehicle and is compatible with various launchers. Airbus’ solution is a mature, versatile and modular concept based on a large portfolio of mission and vehicle designs for Human Space-flight and Exploration built by Airbus for ESA including the Orion European Service Module (ESM), as well as five successful Automated Transfer Vehicle (ATV) space transporter missions, carrying a total of around 30 tonnes of cargo into space.

“With the Airbus Moon Cruiser concept for CLTV, we are establishing the first building blocks for humans and machines to work together all the way between the Earth and the Moon. CLTV can serve Gateway logistics and add value to the EL3 Large Lunar Lander by enabling additional missions, whether standalone for Europe or as part of wider international co-operation,” said Andreas Hammer, Head of Space Exploration at Airbus.

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The CLTV can be launched on Ariane 6, and it could transport a module of over 4.5 tonnes to the Gateway. The European Space Agency ESA could deploy the CLTV in the second half of the decade and it is planned that the CLTV will literally "cruise" on a direct flight path to the Moon.

The target is to validate the following, implementation phase (B2/C/D) of CLTV at the next Ministerial Council in 2022, with the aim of launching in 2027.

Airbus is building the European Service Module for ESA for the new NASA spacecraft Orion, the central spacecraft of future NASA space exploration. The first service module has already been delivered to NASA by Airbus. A second service module is currently being built at Airbus in Bremen. The first launch for Orion - a test flight without astronauts - will take Orion into a lunar orbit and back to Earth under the Artemis I mission and is scheduled for 2021.

About Airbus

Airbus is a global leader in aeronautics, space and related services. In 2019, it generated revenues of € 70 billion and employed a workforce of around 135,000. Airbus offers the most comprehensive range of passenger airliners. Airbus is also a European leader providing tanker, combat, transport and mission aircraft, as well as one of the world's leading space companies. In helicopters, Airbus provides the most efficient civil and military rotorcraft solutions worldwide.

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